

AMSAT News Service Weekly Bulletins

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AMSAT NEWS SERVICE

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The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, the Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on <http://www.amsat.org> publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: [ans-editor \[at\] amsat.org](mailto:ans-editor@amsat.org)

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ANS-239 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS

From: Radio Amateur Satellite Corporation

712 H Street NE, Suite 1653

Washington, DC 20002

DATE 2023 Aug 27

Cast Your Vote: 2023 AMSAT Board of Directors Election Ending Soon

There is less than a three-week window remaining to participate in the 2023 AMSAT Board of Directors Election. The voting process will conclude on September 15, 2023. To access candidate statements and the online Election Ballot, you can visit AMSAT's Wild Apricot membership portal at <https://launch.amsat.org/2023-BoD-Election>.

In this year's election, four seats on the Board of Directors are open for consideration. Once the voting period concludes on September 15th, four of the candidates will take their places on the Board, along with an alternate member. The following individuals have been officially nominated:

Barry Baines, WD4ASW
Jerry Buxton, N0JY
Drew Glasbrenner, K04MA
Zach Metzinger, N0ZGO
Frank Karnauskas, N1UW

Upon clicking the poll link, you will be directed to your ballot or poll question. After selecting your

[ANS thanks Jeff Davis, KE9V, AMSAT Secretary, for the above information]

Registration Now Open for Upcoming International AMSAT Conferences

With a view to the 50-year history of AMSAT-Germany and its mission of promoting amateur radio via satellites, the celebratory conference "From OSCAR 10 to OSCAR 100: 50 years of AMSAT-DL in service to science, research and education" will take place at the Bochum Observatory radome. Accommodations are limited, and the booking of the overnight stays is only possible via the AMSAT-DL store. See <https://amsat-dl.org/en/ticket-sales-festive-conference-50-years-amsat-dl> for more information.

+ AMSAT-UK is pleased to announce that the 2023 Colloquium will take place alongside the RSGB Convention at Kents Hill Park Conference Centre, Milton Keynes on the weekend of 14/15th October 2023.

Full details of the Colloquium will be made available nearer the time on the AMSAT-UK website at <https://amsat-uk.org>. As in previous years, the AMSAT-UK Colloquium will run as a separate stream within the RSGB Convention and will include presentations on a variety of satellite and space related topics.

Entrance to the RSGB Convention is managed by the RSGB and you will be required to purchase Day Tickets for the Saturday and/or Sunday to attend the AMSAT-UK Colloquium. These can be booked via the RSGB website at <https://rsgb.org/main/rsgb-2023-convention>. Early bird discounts are being offered by the RSGB via their website.

+ AMSAT will hold their 41st Annual AMSAT Space Symposium and Annual General Meeting on October 20-21, 2023 at the Sheraton DFW Airport Hotel in Irving, Texas. The schedule will encompass an array of activities, including an AMSAT Board of Directors Meeting, AMSAT Space Symposium, AMSAT Annual General Meeting, AMSAT Banquet and Reception, AMSAT Member Breakfast, as well as the Friday Night Social and Auction.

You can register online for individual events or all events at: <https://launch.amsat.org/event-5363188>. Rooms are available for check-in on Wednesday, October 18, with check-out on Sunday, October 22. The Standard room with a single King bed is currently SOLD OUT; act quickly to secure your reservations. Alternatively, the Standard room with two Queen beds is priced at \$137.00* (excluding state and local taxes of 15%). To make phone reservations, call 972-929-8400 and request the RADIO AMATEUR SATELLITE rate. For online reservations, visit <https://www.marriott.com/event-reservations/reservation-link.mi?id=1689956666782&key=GRP&app=resvlink>.

[ANS thanks AMSAT, AMSAT-UK, and AMSAT-DL for the above information]

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The 2023 AMSAT President's Club coins are here now!
To commemorate the 40th anniversary of its launch
on June 16, 1983, this year's coin features
an image of AMSAT-OSCAR 10.
Join the AMSAT President's Club today and help
Keep Amateur Radio in Space!
https://www.amsat.org/join-the-amsat-presidents-club/
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Chandrayaan-3 Makes Historic Soft Landing on Moon's South Pole

In a momentous achievement, the Chandrayaan-3 mission by the Indian Space Research Organization (ISRO) successfully executed a lunar landing, establishing India as the fourth nation to accomplish this feat.

Amid palpable tension followed by jubilant cheers at the ISRO mission control center, the Chandrayaan-3 mission's robotic lander, known as Vikram, made a triumphant touchdown on the moon's surface near its southern pole at 12:33 P.M. UTC on August 23. The mission, launched on July 14, marked ISRO's determined return to lunar landing endeavors after the Chandrayaan-2 mission's unfortunate crash in 2019. With the safe landing of the spacecraft, India joins the ranks of the former Soviet Union, the United States, and China as countries that have successfully executed soft landings on the moon.

A critical aspect of Chandrayaan-3's landing was its complete autonomy during lunar descent. Due to the three-second signal delay between the lander and Earth, Earth-bound engineers couldn't guide the landing in real-time. Vikram was tasked with reducing its orbital velocity to virtually zero, aligning with the intended trajectory for a secure landing. This required precise coordination of its engines based on continuous measurements of distance, velocity, and orientation.

Learning from the lessons of Chandrayaan-2, ISRO incorporated increased redundancies and safeguards into Chandrayaan-3. The mission carried extra fuel and an improved guidance, navigation, and control system, capable of correcting significant deviations from the intended path. In-depth ground tests using helicopters and cranes further validated the changes made to 21 subsystems.

The success of Chandrayaan-3 is particularly significant given the recent history of lunar landing attempts. Out of the past six attempts in the last five years, only four were successful. Notably, Russia's Luna-25 spacecraft crashed on August 19, joining the ranks of unsuccessful landers from Israel, India, and Japan. Chandrayaan-3's achievement aligns with the accomplishments of China's Chang'e 4 and Chang'e 5 landers, which have also found success in recent times.

Sankaran Muthusamy, director of the U. R. Rao Satellite Center, ISRO's center responsible for the Chandrayaan-3 mission, stressed the responsibility to inspire both India and the world through this historic landing.

Chandrayaan-3's intricate lunar descent involved four primary phases. The "rough braking" phase initiated when the craft was 30 kilometers above the lunar surface. It fired its four main engines for approximately 12 minutes, reducing its horizontal velocity by about 80 percent. A critical "attitude hold" phase followed, wherein smaller thrusters stabilized the lander to ensure accurate sensor readings. Chandrayaan-3 relied on redundant altimeters, one using lasers and another using microwaves, to determine its height. Microwave altimeters, with their wider coverage, enhanced the mission's accuracy.

The successful mission is expected to propel India's lunar ambitions further. By signing the Artemis Accords, a framework for collaborative lunar exploration led by the United States, India has opened avenues for enhanced partnerships with other signatory countries. The success of Chandrayaan-3 also paves the way for India's potential collaboration with Japan in its upcoming LUPEX rover mission. This partnership aims to study water ice on the moon's south pole, contributing valuable data to future endeavors, including NASA's Artemis program.

[ANS thanks Jatan Mehta, writing for ScientificAmerican.com for the above information]

SpaceX Launches Crew-7 Mission aboard Crew Dragon Endurance

SpaceX successfully launched the Crew-7 mission on August 26, 2023. Lift-off occurred precisely at 07:27 UTC (3:27 AM EDT) from Launch Complex 39A (LC-39A) at the Kennedy Space Center in Florida.

The mission, also known as United States Crew Vehicle mission 7 (USCV-7), was orchestrated by SpaceX, the launch provider, for their customer, the National Aeronautics and Space Administration (NASA). With this launch, SpaceX demonstrated its prowess in space technology, deploying its Falcon 9 Block 5 rocket and Booster B1081-1 for the mission.

This launch was no ordinary event. It marked the 250th launch of a Falcon 9 rocket, accompanied by the

Aerospace Corporation and the U.S. Air Force Research Laboratory. This formidable space contender was launched aboard a SpaceX Falcon 9 rocket on June 5, 2023, concurrently with cargo bound for the International Space Station.

Five determined teams squared off in the Hack-A-Sat contest, each striving to outsmart the defenses of Moonlighter and reap both prestige and monetary rewards. Emerging triumphant was the Italian consortium "mHACKeroni," a fusion of five Italian cyber research teams, whose accomplishment netted them the coveted first-place position and a princely sum of \$50,000. Following closely in second place was the "Poland Can Into Space" squad hailing from Poland, pocketing \$30,000 for their impressive performance. The third spot on the podium was clinched by the collaborative British-American force known as "jmp fs:[rcx]," whose strategic prowess earned them \$20,000 in cash winnings.

The essence of the competition was the penetration of Moonlighter's protective layers, enabling participants to override the satellite's predetermined scope of observation targets. Successful teams then wielded the power to direct the satellite's lens towards desired focal points on the Earth's surface, capturing images that were subsequently relayed back to ground stations.

The significance of such competitions resonates in their contribution to fortifying the security of satellite systems. Col. Neal Roach, representing the Space Systems Command of the U.S. Air Force, emphasized the broader impact of the Hack-A-Sat initiative. "Hack-A-Sat has raised public awareness on the importance of space cybersecurity and has helped to strengthen the industry, security, and government partnership that we need to build more resilient space systems that will keep our nation and our world secure," he stated.

The urgency surrounding satellite cybersecurity has grown in recent years, exacerbated by real-world incidents. In a troubling revelation, Elon Musk disclosed that SpaceX's Starlink satellites faced repeated cyberattacks, coinciding with Russia's actions in Ukraine. The history of cyber intrusions into satellite systems traces back to 2011 when two U.S. government satellites reportedly fell victim to suspected Chinese military hacking endeavors.

[ANS thanks Brett Tingley, Editor for Space.com for the above information]

Satellite Top 100 Rovers August 2023 Rankings

The August 2023 rankings for the Top 100 Rovers (All Satellites) in satellite operations, as determined by @GridMasterMap on Twitter, has been released. The ranking is determined by the number of grids and DXCC entities activated, taking into account only those grids where a minimum number of QSOs logged on the gridmaster.fr website have been validated by a third party. Grid numbers do not directly reflect the exact number of activations. Satellite operators are encouraged to upload their LoTW satellite contacts to <https://gridmaster.fr> in order to provide more accurate data.

Updated: 2023-08-05

1	N5UC	26	KE4AL	51	JK2XXK	76	AC0RA
2	ND9M	27	N7AGF	52	DL2GRC	77	PT9BM
3	NJ7H	28	ON4AUC	53	M1DDD	78	A41ZZ
4	JA9KRO	29	KG5CCI	54	AD7DB	79	HB9GWJ
5	DP0POL	30	K8BL	55	VE1VOX	80	PT9ST
6	N6UA	31	N6DNM	56	AA8CH	81	5H3SE
7	DL6AP	32	KE0PBR	57	LU4JVE	82	KB2YSI
8	AD0HJ	33	WI7P	58	KM4LA0	83	9J2SEU
9	WY7AA	34	J02ASQ	59	VE3G0P	84	DL4EA
10	HA3F0K	35	XE3DX	60	AM1SAT	85	DK9JC
11	K5ZM	36	EA4NF	61	KD8RTT	86	K4DCA
12	AK8CW	37	OE3SEU	62	FG80J	87	AB5SS
13	AD0DX	38	SP5XSD	63	N4UF0	88	PA3GAN
14	N5B0	39	VE1CWJ	64	N4DCW	89	K0FFY
15	N9IP	40	PR8KW	65	PT2AP	90	EC3TZ
16	WD9EWK	41	W7WGC	66	KJ7NDY	91	KF6J0Q
17	W5PFG	42	EB1A0	67	AF5CC	92	VE6WK
18	ND0C	43	F4DXV	68	N0TEL	93	CU2ZG
19	LU5ILA	44	JL3RNZ	69	V02AC	94	KG4AKV
20	KX9X	45	KE0WPA	70	KI7UXT	95	KC7JPC

21	KB5FHK	46	K7TAB	71	KI7QEK	96	VE7PTN
22	LA9XGA	47	VA7LM	72	W8LR	97	YU0W
23	VE3HLS	48	AA5PK	73	XE1ET	98	VA3VGR
24	KI7UNJ	49	KE9AJ	74	WA9JBQ	99	WN9Q
25	DJ8MS	50	F5VMJ	75	VK5DG	100	V55QO

[ANS thanks @GridMasterMap for the above information]

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Want to fly the colors on your own grid expedition?
 Get your AMSAT car flag and other neat stuff
 from our Zazzle store!
 25% of the purchase price of each product goes
 towards Keeping Amateur Radio in Space
https://www.zazzle.com/amsat_gear

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Changes to AMSAT-NA TLE Distribution for August 25, 2023

Two Line Elements or TLEs, often referred to as Keplerian elements or keps in the amateur community, are the inputs to the SGP4 standard mathematical model of spacecraft orbits used by most amateur tracking programs. Weekly updates are completely adequate for most amateur satellites. Elements in the TLE bulletin files are updated daily. TLE bulletin files are updated to add or remove satellites as necessary Thursday evenings around 2300 UTC, or more frequently if new high interest satellites are launched. More information may be found at <https://www.amsat.org/keplerian-elements-resources>.

This week there are no additions or deletions to the weekly AMSAT TLE distribution.

[ANS thanks AMSAT Orbital Elements page for the above information]

ARISS NEWS

Amateurs and others around the world may listen in on contacts between amateurs operating in schools and allowing students to interact with astronauts and cosmonauts aboard the International Space Station. The downlink frequency on which to listen is 145.800 MHz worldwide.

+ Upcoming Contacts

Bowman Middle School, Bakersville, NC, direct via W4GUZ
 The ISS callsign is presently scheduled to be NA1SS
 The scheduled crewmember is Warren Hoburg KB3HTZ
 The ARISS mentor is AA6TB
 Contact is go for: Mon 2023-08-28 14:38:46 UTC

Augusta Preparatory Day School, Augusta, GA, direct via K4RGK
 The ISS callsign is presently scheduled to be TBD
 The scheduled crewmember is Steve Bowen KI5BKB
 The ARISS mentor is AA4KN
 Contact is go for: Thu 2023-08-31 13:51:28 UTC

The crossband repeater continues to be active (145.990 MHz up {PL 67} & 437.800 MHz down). If any crewmember is so inclined, all they have to do is pick up the microphone, raise the volume up, and talk on the crossband repeater. So give a listen, you just never know.

The packet system is also active (145.825 MHz up & down).

As always, if there is an EVA, a docking, or an undocking; the ARISS radios are turned off as part of the safety protocol.

Note, all times are approximate. It is recommended that you do your own orbital prediction or start

listening about 10 minutes before the listed time.

The latest information on the operation mode can be found at <https://www.ariss.org/current-status-of-iss-stations.html>.

The latest list of frequencies in use can be found at <https://www.ariss.org/contact-the-iss.html>.

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

Upcoming Satellite Operations

TF/DL2GRC: Got an email from Nina stating that she & the family will be heading to Iceland with operations scheduled to begin on Friday (18th).

>From Nina: We will do a trip around the Island and hope to be active on ME0, LE0 and GE0: family, equipment, satellites and weather permitting. Operations can be expected between August 18th to 30th. Please keep in mind, it will be a family holiday and no DX-pedition. Look out for TF/DL4BEN, TF/DL8SCU and TF/DL2GRC. Stay tuned!

To include your satellite roving plans in the AMSAT News Service Weekly bulletins, send them to Ian, K5ZM at k5zm (at) comcast (dot) net at least a couple of weeks in advance. Upcoming satellite operations are updated weekly on the AMSAT Upcoming Satellite Operations page but may expire before the next AMSAT News Service bulletin is released. You can watch for the latest roving information to become available at <https://www.amsat.org/satellite-info/upcoming-satellite-operations>.

A growing number of satellite rovers are currently engaged in sharing their grid square activations on <https://hams.at>. By visiting the website, you gain easy access to comprehensive information about the operators responsible for activating specific grid squares. Additionally, you have the ability to assess the match score between yourself and a particular rover for a given pass, while also being able to identify the upcoming satellite passes that are accessible from your location.

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above information]

Hamfests, Conventions, Maker Faires, and Other Events

AMSAT Ambassadors provide presentations, demonstrate communicating through amateur satellites, and host information tables at club meetings, hamfests, conventions, maker faires, and other events.

+ AMSAT-DL Festive Conference & Symposium (50 Years)

September 15-17, 2023

Bochum Observatory

Blankensteiner Str. 200A, 44797 Bochum, Germany

+ 2023 AMSAT-UK Colloquium & RSGB Convention

October 14-15, 2023

Kents Hill Park Conference Centre

Milton Keynes MK7 6BZ, United Kingdom

+ 41st AMSAT Space Symposium & Annual General Meeting

October 20-21, 2023

Sheraton DFW Airport Hotel

4440 W John Carpenter Fwy, Irving, TX 75063

AMSAT Ambassador Clint Bradford, K6LCS, says,

"Think a 75-minute presentation on "working the easy satellites" would be appropriate for your club or event? Let me know by emailing me at k6lcsclint (at) gmail (dot) com or calling me at 909-999-SATS (7287)!"

Clint has NEVER given the exact same show twice: EACH of the 150+ presentations so far has been

customized/tailored to their audiences.

[ANS thanks Clint Bradford, K6LCS, and AMSAT for the above information]

Satellite Shorts From All Over

+ Russia's Luna-25 mission, launched from Vostochny Cosmodrome on August 10, has encountered failure as its spacecraft crashed into the Moon's surface during an attempt to land at the lunar south pole. This marks Russia's first lunar mission since 1976. The intended target was the Boguslawsky Crater near the south pole, and the spacecraft was equipped with instruments, including a robotic arm, to search for water ice up to 50 centimeters below the surface. The failure occurred after a command was sent to lower the craft's orbit, resulting in a loss of communication on August 19. Roscosmos confirmed the craft's collision with the lunar surface on August 20. Roscosmos plans to follow Luna-25 with a lunar orbiter, called Luna-26, and then two more landing missions: Luna-27, which will send a drilling rig to the lunar surface; and Luna-28, a sample-collection mission that aims to return material from the moon's polar regions to Earth. [ANS thanks Elizabeth Howell, Staff Writer for Spaceflight.com, for the above information]

+ On August 23, 2023, the Progress MS-24 cargo ship launched from Baikonur Cosmodrome carrying 2.5 tons of cargo for the International Space Station (ISS). This mission marked the third out of four Progress cargo ships planned for 2023. The cargo ship, designated as Progress MS-24, was launched using a Soyuz-2-1a rocket from Launch Pad 6 at Site 31 in Baikonur. It followed a sequence of stages, with successful booster separations, fairing jettisoning, and third-stage ignition, ultimately inserting the cargo ship into an initial parking orbit. Progress MS-24 arrived at the International Space Station's aft port of the Zvezda service module at 11:45 p.m. EDT on August 24. The spacecraft will remain at the orbiting laboratory for approximately six months, then undock for a destructive but safe re-entry into Earth's atmosphere to dispose of trash loaded by the crew. [ANS thanks RussianSpaceWeb.com for the above information]

+ Brown University students successfully demonstrated a low-cost solution to address space debris by reentering their cube satellite, SBUDNIC, into Earth's atmosphere. The satellite, developed by an academically diverse team, including undergraduates led by alumni Marco Cross and faculty member Rick Fleeter, deployed a plastic drag sail made from Kapton polyimide. This sail, acting like an umbrella, aided the satellite's descent and contributed to its early reentry. SBUDNIC was launched aboard SpaceX's Transporter 5 mission and reentered the atmosphere after just 445 days, about five years earlier than planned. The project's success highlights the potential for cost-effective measures to combat space junk and reduce the risk it poses to space vehicles. [ANS thanks Brown University for the above information]

+ NASA's Solar Terrestrial Relations Observatory-A spacecraft (STEREO-A), launched in October 2006, far outlived its mission life span of two years. Its orbital trajectory around the sun meant that it had a chance to do what very few other NASA spacecraft could: eventually make its way back toward home. This month, when STEREO-A passes between the sun and the Earth for the first time since its launch, it will be used to perform new research on the sun, aided by newer NASA satellites that have been developed more recently. When STEREO-A was launched, it viewed the sun during a solar minimum. That limited the number of coronal mass ejections and other phenomena that the spacecraft initially observed. This year, STEREO-A's return has coincided with a period of intense solar activity. Earthbound instruments can only ever observe one Earth-facing slice of the sun at a time, while the rest of the rapidly changing solar surface remains obscured. The STEREO spacecraft, from its offset position, allowed scientists to capture a 360-degree view of the sun for the first time, research that is ongoing as long as this old bird continues to perform. (ANS thanks the Washington Post for the above information)

Join AMSAT today at <https://launch.amsat.org/>

In addition to regular membership, AMSAT offers membership to:

- * Societies (a recognized group, clubs or organization).
- * Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
- * Post-secondary school students enrolled in at least half-time status shall be eligible for the

student rate for a maximum of 6 post-secondary years in this status.

* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor, Mitch Ahrenstorff, AD0HJ
ad0hj [at] amsat.org